DOCUMENT RESUME

ED 298 715 EC 210 649

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TITLE Comparison of Structured Modeling and Mother-Child Play Settings on the Development of Pretend Actions in Young Children with Down's Syndrome.
INSTITUTION Tokyo Gakugei Univ. (Japan). Research Inst. for the Education of Exceptional Children.
PUB DATE 88
NOTE 8p.
PUB TYPE Reports - Research/Technical (143) -- Journal Articles (080)
JOURNAL CIT RIEEC Report; v37 p65-71 1988

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Behavior Development; Comparative Analysis; *Downs Syndrome; Foreign Countries; *Imitation; *Modeling (Psychology); Mothers; *Parent Child Relationship; Play; Preschool Education; *Pretend Play; Toys; Young Children
IDENTIFIERS Japan

ABSTRACT

This study examined the functions of structured modeling and mother-child play settings upon the development of pretend actions in young Down Syndrome children. Subjects were 30 pairs of Japanese children, with a developmental age range of 12-35 months, and their mothers. The children were individually administered five phases of premodeling, controlled mother-child play, uncontrolled mother-child play, modeling by the experimenter, and post-modeling, in that order. The materials used were lifelike objects, miniature toys, and ambiguous objects. The study's results show that more children increased their levels of pretend actions and showed the highest level of decentration and/or decontextualization in the modeling setting rather than the mother-child play setting. However, modeling produced a decrease in nonmodeled and modified pretend actions with developmental age, while mother-child play showed an increase in the number of different acts. The difference in the two settings was regarded as merely a discrepancy of control, as it was possible to teach the mother to be a more effective model. The study suggests that controlled and uncontrolled settings are appropriate for the acquisition and facilitation of pretend actions in retarded children. An abstract is provided in Japanese. (JDD)

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RIEEC REPORT
Vol. 37, 1988, 65–71

ED298715

COMPARISON OF STRUCTURED MODELING AND MOTHER-CHILD PLAY SETTINGS ON THE DEVELOPMENT OF PRETEND ACTIONS IN YOUNG CHILDREN WITH DOWN'S SYNDROME

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Key words: pretend actions, symbolic play, Down's syndrome children, modeling, mother-child play

The development of pretend behavior or symbolic play in retarded children has been shown to be correlated with developmental or mental age (DA, MA) rather than chronological age (CA) (Hill & McCune-Nicolich, 1981; Jeffree & McConkey, 1976; Wing et al., 1977). Shimada (1986) revealed that children with Down's syndrome (DS) showed the same developmental processes with developmental age as the nonretarded in decentration and decontextualization but not in integration of pretend actions. Decentration means to direct actions towards from the self to objects and others. Decontextualization refers to decreased environmental support and progresses from imitation to substitution and then to invention. Integration concerns combining separate actions in coordinated sequences. It goes on from single actions to single-scheme and then to multischeme actions (see the reviews on nonretarded children of Fein, 1981; McCune-Nicolich, 1981; McCune-Nicolich & Fenson, 1984; Rubin et al., 1983). However, the DS children studied by the author demonstrated multischeme combinations at an earlier age than single-scheme combinations. The earlier onset of multischeme actions was also found with the nonretarded in a study by Shimada et al., (1981). Thus this tendency cannot be regarded solely as the trait of DS children. The different outcomes on integration seem to stem from the use of less materials than those in other studies.

Modeling effects on the pretend actions of nonretarded children have been reported by Fenson (1984), Fenson & Ramsey (1981), Shimada (1987a) and Watson & Fischer (1977, 1980). The level of pretend actions influenced by modeling and verbal suggestions was related to the child's developmental level. Shimda (1986) exhibited that modeling and verbal suggestions had such an effect, and also showed maintenance of the effect until the following day in DS children.

Caregivers are supposed to act as models for children in everyday life. Prior literature on the nonretarded showed that the level of pretend play in children and the number of their different pretend acts increased in maternal-involvement-play situations (O'Connell & Bretherton, 1984; Slade, 1987; Shimada et al., 1982). The identical effects of maternal involvement were exhibited in DS children (Shimada, 1987b).

Strucuted modeling and mother-child play situations differ in the degree of control exerted by the model, thus child behavior should differ in the 2 settings. This study was aimed at examining the different functions of the 2 settings upon the development of pretend actions in young DS children.

METHOD

1. Subjects

The samples were 30 pairs of Japanese standard

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trisomy Down's syndrome children (17 males, 13 females) and their mothers from middle class families. The ranges of the CAs and DAs of the children were 16-61 months and 12-35 months, respectively. The DA was measured by a standardized Developmental Questionnarie (Tsumori & Inage, 1961) which is composed of 5 domains: motor, cognitive, social, self-help and language development. The mean of the DQs was 64 (SD = 9.8) with a range of 44-77. All of the children had experienced Portage early intervention program (Yamaguchi, 1983). The children were divided into three groups based on DA with 10 children per group and a roughly equal number of males and females per group. The mean and standard deviation of the DAs of each group were 16.1 months (2.1) for the low group (L), 22.4 months (1.6) for the middle group (M) and 30.6 months (2.4) for the high group (H).

2. Materials

1) Structured Modeling

The materials consisted of 4 sets of lifelike objects, miniature toys and ambiguous objects: a cup and a small twig (10 cm in length) for set I, a wooden block (3 × 15 × 1 cm) and a square sponge (2 × 3 × 2 cm) for set II, a girl doll (30 cm in height) and a rice bowl for set III, and a stuffed toy dog dressed as a boy (30 cm in height), a spoon and a box (11 × 20 × 6 cm) for set IV.

2) Mother-Child Play

The materials used were 2 dolls, a stuffed toy dog either dressed as a boy or girl (30 cm in height), various miniature toys and ambiguous objects. The miniature toys consisted of cooking and feeding utensils (a pan, kettle and table, and 2 tea cups, spoons, plates, rice bowls and pairs of chopsticks); bedding (a coverlet, bed mat and pillow); grooming and dressing materials (a hand mirror, comb, bag and hat); baseball set (a bat and 2 balls); and cars (a truck and an open car). The ambiguous objects consisted of 2 pieces of paper (18 × 25 cm), 2 pieces of cardboard (10 × 10 cm), a piece of cloth (40 × 40 cm), a piece of string (150 cm in length), 6 square sponges (2 × 3 × 2 cm), 3 types of twigs (large, small, Y-shaped; 10-20 cm in length; two each), 2 wooden blocks (3 × 15 × 1 cm), 3 cylinder-shaped wooden blocks (2.5 cm in diameter, 10 cm in length), a box (11 × 20 × 6 cm) and 2 round cans (7 cm in diameter, 3 cm in depth).

3. Procedure

The children were individually tested in their own homes with their mothers present. Following a warming-up session, the child was administered 5 phases of premodeling (5 min), controlled mother-child play (10 min), uncontrolled mother-child play (10 min), modeling and postmodeling (10 min) in that order. Three phases of premodeling, modeling, and postmodeling were repeated in an identical manner the next day. The whole procedure of 5 phases on the first day and 3 phases on the second day was videotaped. After the experimental sessions on the second day, the experimenter told the mother about her child's developmental level of play and suggested in concrete ways to facilitate her child's development.

1) Structured Modeling

The procedure was identical to that of my previous study with nonretarded children (Shimada, 1987a). In the premodeling phase, the experimenter presented a set of materials and encouraged the child to play with them. The order of presentation of the 4 sets was counterbalanced across children. In the modeling phase, the experimenter demonstrated 3-part sequential pretend acts with appropriate utterances for each set. The modeled actions were composed of different levels of decentration, decontextualization and integration. Immediately after modeling with the set, the postmodeling phase began with the same set of materials. Verbal suggestions were given when the child did not imitate certain acts.

2) Mother-Child Play

In the controlled mother-child play phase, the mother was instructed neither to initiate nor to teach the manipulation of materials. She was encouraged, however, to play with her child, limiting her pretend behavior to her child's repertory when her child approached her in that way. In the uncontrolled

phase, the mother was merely told to play with her child as she normally did in her home. All materials were introduced simultaneously on the floor in both phases.

4. Data Coding

The videotapes were transcribed with a given form including the content of the mother's verbal suggestions. Each pretend action of the child and mother was assigned to all of 3 categories; decentration, decontextualization and integration. Subcategories of decentration were self, object, passive other, active other I and active other II. Subcategories of decontextualization and integration were imitative, substitutive and inventive for decontextualization, and single, single scheme and multischeme for integration. The definitions of subcategories were the same as those in Shimada & Sano (1984) except for active other agent use of decentration. Active other agent use was divided into 2 subcategories in this study. Active other I refers to gross movement of lifelike objects, e.g., have them stand, walk, sit down or jump. Active other II was defined as fine movement of lifelike objects, e.g., haivng them hold a spoon or rice bowl and eat with it. To assess reliability, the records of 6 pairs of children and their mothers (2 from each group) were scored by a second trained coder. The ratio of agreement was 93%-100% for pre- and postmodeling phases, 89%-97% for controlled play phases and 85%-92% for uncontrolled play phases.

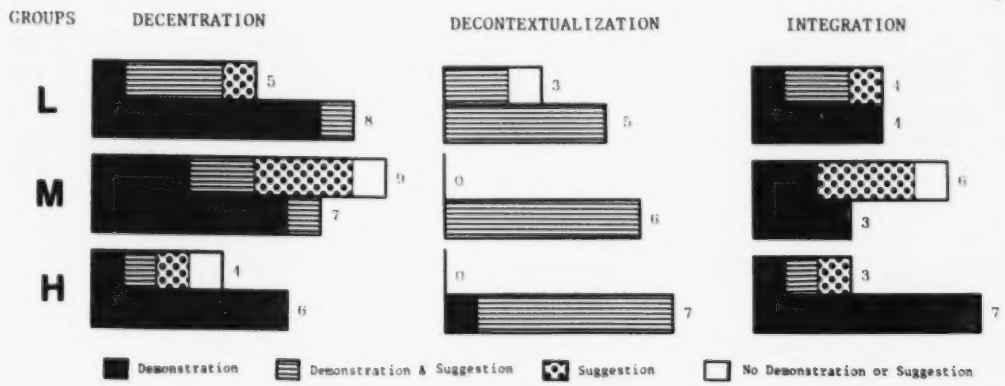
RESULTS

While the DS children looked frequently at their mothers' pretend actions (the mean of % attention = 69.5 for the L group, 65.6 for the M group and 74.1 for the H group; no significant differences among the 3 groups by the F test), they did not spontaneously imitate them that often (the mean of % imitation = 11.6 for the L group, 11.3 for the M group and 14.4 for the H group; no significant differences among the 3 groups) in the uncontrolled mother-child play setting. Thus the child's pretend action were analyzed as a function of the adult's antecedent stimuli (demonstration, verbal suggestion, in combination, or neither demonstration nor verbal suggestion) in the postmodeling and uncontrolled mother-child play settings.

Since the developmental process from single scheme to multischeme actions was not seen in the premodeling phase on the first day, the number of different acts in combination was selected as the developmental index of integration.

1. The Number of Children Increasing Levels

Fig. 1 shows the number of children who ex-



Note. The upper and lower bars represent mother-child play and structured modeling settings, respectively.

Fig. 1 The number of children increasing levels as a function of antecedent stimuli by an adult

hibited higher levels of decentration, decontextualization or integration in uncontrolled than controlled mother-child play, and in postmodeling than premodeling on the first day.

The number of children whose level of decentration increased was not significantly different between modeling and mother-child play in any DA group (binomial test, two-tailed). In the L group, however, more children tended to show an increase in the level of decentration following the adult's demonstration in modeling than mother-child play (P = .07).

Most of the adult's antecedent stimuli which increased the level of decontextualization were the combination of demonstration and verbal suggestions across groups. None of the children showed higher levels in the mother-child play of the M and H groups, which resulted in a significant advantage for modeling (P = .032 for the M group, P = .016 for the H group). There was no significant differences in settings in the L group.

The difference in the number of children increasing their level of integration was not significant between the 2 settings across groups. Yet more children in the H group showed a tendency to increase their level as a function of the adult's preceding demonstration in the modeling setting (P = .07).

2. Percent Children Showing Their Own Highest Levels

Fig. 2 shows the percent of children who demonstrated their own highest levels of decentration, decontextualization or integration in uncontrolled mother-child play and postmodeling on the first day across the adult's preceding stimuli conditions.

There was no significant differences between the 2 settings in percent of children in the L and M groups who showed their highest level of decentration (binominal test, two-tailed). However, more children in the H group tended to show active other II use in the modeling setting merely by watching the experimenter's demonstration (P = .062). Thirty-three % of those children spontaneously reproduced active other II behavior in the premodeling phase the next day and 67% of them did so by verbal suggestion alone.

There were less children showing substitution as the highest level of decontextualization in the modeling setting than in mother-child play (P = .062 for the L and M groups, P = .016 for the H group). On the other hand, significantly more children in the M and H groups demonstrated invention in the modeling setting (P = .032 for the M group, P = .008 for the H group). All of these children in the M group showed invention by the combination of demonstration and verbal suggestions, but none spontaneously demon-

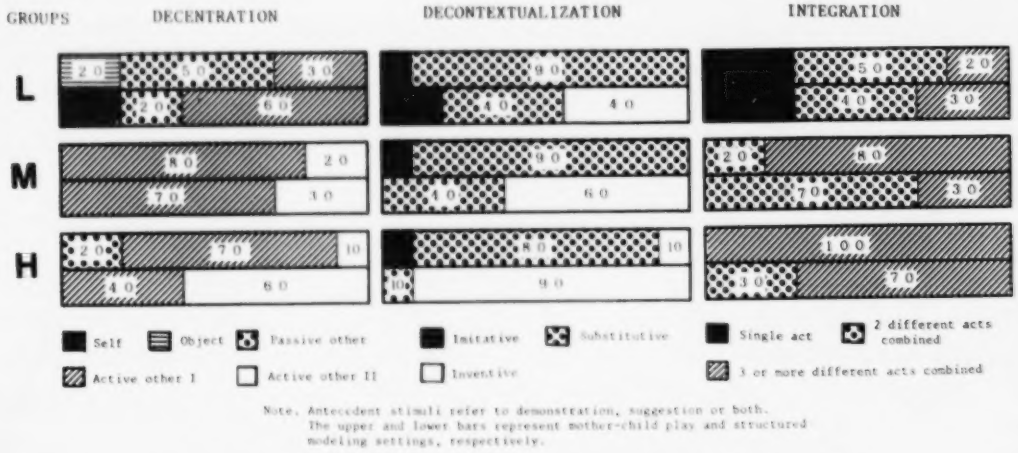


Fig. 2 Percent of children showing their own highest levels in decentration, decontextualization or integration

strated invention in the premodeling phase on the second day and 50% exhibited such a level by verbal suggestion alone. In the H group, 33% of these children showed invention only by demonstration and 67% by combination of demonstration and verbal suggestion. On the following day, 22% and 78% of these children reproduced invention spontaneously and by verbal suggestion alone, respectively.

The outcomes of the 2 settings did not significantly differ between groups for integration. However, the integration of combining modeled acts with nonmodeled and modified pretend acts decreased with DA in the postmodeling phase. The ratio of children showing such integration was 70% for the L group, 50% for the M group and 40% for the H group. The maximum number of different acts in combination significantly increased during uncontrolled mother-child play in the M and H groups ($t = 2.857$ for the M group, $t = 2.459$ for the H group, $P < .05$, $df = 9$, two-tailed). The number of different acts was significantly larger in uncontrolled than in controlled mother-child play across the 3 groups ($t = 5.018$, $P < .001$ for the L group; $t = 4.325$, $P < .01$ for the M group; $t = 2.832$, $P < .05$ for the H group; $df = 9$, two-tailed).

DISCUSSION

The most marked differences between the modeling and mother-child play settings were seen in the decontextualization. The number of children who increased their level of decontextualization and demonstrated the highest level, invention, was larger in modeling. Only one mother demonstrated invention in the L group. Her inventive pretend action was not imitated by her child. The highest level of decentration, active other II use, tended to be seen more often in modeling than mother-child play in the H group. Only two mothers showed such level of pretend actions. One mother in the H group succeeded in having her child reproduce active other II use, but the other mother from the L group did not. In other words, less children showing invention or active other II in the mother-child play are due to the mother's behavior. The mother did not provide demonstration or verbal suggestions. Or she demonstrated far beyond her child's developmental level. It has been pointed out in studies of children with Down's syndrome as well as nonretarded children that the level of pretend actions affected by modeling and verbal suggestions is related to the child's developmental level (Fenson, 1984; Fenson & Ramsey, 1981; Shimada, 1986, 1987a; Watson & Fischer, 1977, 1980). Thus the mother needs concrete suggestions to be an effective model for her child.

The modeling setting tended to increase the level of the child's play merely by demonstration except for decontextualization. The percent of imitation of the mother's pretend action in mother-child play was low across the 3 groups in spite of a high percent of attention. Bandura (1977) mentioned that observation was enough for acquisition while performance was influenced by various factors. Demonstration alone may not be a strong enough stimulus to emit the child's performance in uncontrolled settings. There are likely two reasons why demonstration alone may not be strong enough. One might be that children who can already pretend are more motivated to do their own activities with various objects than to imitate their mothers' actions. The other is probably that retarded children are less spontaneous in imitation in uncontrolled settings. Further studies are needed to find which interpretation is more appropriate.

As seen in this study, a structured setting with less objects emits more imitation of modeled acts. Since the children could reproduce the modeled actions the next day, the children probably reach their own optimal level (Fischer, 1980) after the modeling. However, the structured modeling setting produced a decrease in nonmodeled and modified pretend actions with DA, while the uncontrolled mother-child play increased the number of different acts in the present study.

It is possible that teaching the mother in a concrete manner how to assist her child's development may make her a more effective model. If structured modeling settings are followed by free play, the problems as seen in this study may be solved. There-

fore, the results of the present study may be regarded as merely the difference between controlled and uncontrolled settings. The study suggests that controlled and uncontrolled settings are appropriate for the acquistion and facilitation of pretend actions in retarded children.

SUMMARY

The purpose of this study was to examine the different functions of structured modeling and mother-child play settings upon the development of pretend actions in Down's syndrome children.

The subjects were 30 pairs of Japanese children with a DA range of 12-35 months and their mothers, 10 pairs at each of 3 DA groups. The children were individually administered 5 phases of premodeling, controlled mother-child play, uncontrolled mother-child play, modeling by the experimenter and post-modeling, in that order. The materials were lifelike objects, miniature toys and ambiguous objects. They were presented set by set in the modeling setting and simultaneously in the mother-child play setting.

More children increased their levels of pretend actions and showed the highest level of decentration and/or decontextualization in the modeling setting rather than mother-child play setting. However, modeling produced a decrease in nonmodeled and modified pretend actions with DA, while mother-child play showed an increase in the number of different acts.

The difference in the 2 settings was regarded as merely a discrepancy of control since it was possible to teach the mother in a concrete manner to be a more effective model. The study suggests that controlled and uncontrolled settings are appropriate for the acquisition and facilitation of pretend actions in retarded children.

ACKNOWLEDGEMENTS

A portion of this study was presented at the 25th Annual Convention of the Japanese Association of Special Education.

The author gratefully acknowledges the help of Ms. Y. Habara and Ms. K. Kitazawa in videotape recording and date coding. Special acknowledgement is also due to Prof. K. Yamaguchi, Tokyo Gakugei University for his introduction of the Down's syndrome children and their mothers and to the staff members of the Study Group of Infants and Young Children at Tokyo Gakugei University for their testing of the children's development. Last but not least the author wishes to thank the children and their mothers.

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ダウン症幼児における象徴遊びの発達に及ぼす構成的モデリングと母子遊びの機能差

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本研究は，象徴遊びの発達に及ぼす構成的モデリングと母子遊びの機能差について検討することを目的とした。被験者はダウン症児（CA16－61ヶ月，DA12－35ヶ月）とその母親30組であり，個別実験である。実験は，モデリング事前→統制母子遊び→非統制母子遊び→実験者によるモデリングとモデリング事後の順に施行された。象徴遊びの３視点（脱中心化，脱文脈化，統合化）において，水準上昇者，及び最高水準を示す者は，モデリング条件の方が多かった。しかしながら，モデリング条件では非演示のふりをする行為を事後で示す被験児が，DA上昇と共に減少した。一方，非統制母子遊びではふりをする行為の種類が増加した。構成的モデリングと母子遊びの差は統制度の差として解釈され，統制条件は習得に，非統制条件は促進に効果があると示唆された。

キーワード：ふりをする行為　象徴遊び　ダウン症幼児　モデリング　母子遊び